LPC# 031 186 0037 - Cook County
Marvel Engineering - Melrose Park
ILD 984 837 104
SF/HRS

Site Reassessment

Prepared by:
Office of Site Evaluation
Division of Remediation Management
Bureau of Land

SIGNATURE PAGE

Title: CERCLA Site Inspection for Marvel Engineering

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Signature — Date: 11/9/2017

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CERCLA
SITE REASSESSMENT

For:

MARVEL ENGINEERING
ILD 984 837 104
LPC 031 186 0037
MELROSE PARK, ILLINOIS

PREPARED BY:
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF LAND
OFFICE OF SITE EVALUATION

October 30, 2017

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Section 1.0 SITE BACKGROUND

Section 1.1 Site Introduction

On January 7, 2016, the Illinois Environmental Protection Agency's (Illinois EPA) Office of Site Evaluation was tasked by the United States Environmental Protection Agency (U.S. EPA) Region V to conduct a Site Reassessment (SR) at the Marvel Engineering site (the Site) in Melrose Park, Cook County, Illinois. The Site is located at 2085 North Hawthorn Avenue, Melrose, Illinois. (Latitude 41.915833, Longitude -87.872500).

The Site Reassessment is performed under the authority of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) commonly known as Superfund. Current U.S. EPA policy stipulates that a Site Reassessment be conducted to determine the current status of the Marvel Engineering site. The Site Reassessment will consist of an evaluation of recent information to determine if further Superfund investigations are warranted. The Site Reassessment will supplement previous work, and is not intended to replace previous CERCLA assessments.

The Site Reassessment is designed to evaluate recent information that will help determine if the site qualifies for possible inclusion on the National Priorities List (NPL), or should receive a No Further Remedial Action Planned (NFRAP) designation. At the conclusion of the reassessment process, Illinois EPA will recommend that the site be given a NFRAP designation, receive further Superfund investigations, or referred to another state or federal cleanup program.

The Marvel Engineering site was initially placed on the Superfund Enterprise Management System (SEMS) database in 1993 as a result of an Illinois EPA Discovery Action. An Integrated Site Inspection was completed in 1997 with a Low Recommendation.
The Site is listed on SEMS as Other Cleanup Authority – state lead.

The Site Reassessment Report will describe current site conditions and illustrate how the site has changed since the last CERCLA investigation in 1997. This report will contain a summary of existing information that will include site history, current site conditions, evaluate past analytical data, and past remedial activities. The Site Reassessment will also support emergency response or time-critical removal activities if they are warranted.

Section 2.0 Site Description and History

Section 2.1 Site Description

Marvel Engineering is located at 2085 North Hawthorn Avenue, Melrose Park, Illinois in Cook County (Section 33 of Township 2 North, Range 12 West). The Site covers approximately 9 acres and is illustrated in Figure 1. The Site is located southeast of the intersection between Armitage and Hawthorn Street. The Site is located in a primarily urban industrial setting, however there are residential houses located within ¼ mile north of the site. The property currently has four property identification numbers. The building located on-site is 12-33-400-064-0000, while the three other PINs are associated with the parking lots to the south of the building (12-33-400-066, 12-33-400-067 (these two are the most southern parcels) and 12-33-400-094 and 12-33-400-095 are the parking lot area directly south of the building) (http://www.cookcountyassessor.com/Search/Property-Search.aspx).

The topography of the site is relatively flat with storm water and natural runoff from the property draining to the east toward Silver Creek, which is a tributary of the Des Plaines River. Silver Creek is located about ¼ mile east of the property, and the Des Plaines River is located approximately 2 miles east of the property. A portion of the site is located within the 1% Annual Chance Flood Hazard, while the majority of the site is located within the 0.2% Annual Chance Flood Hazard. Lake Michigan is located about 10 miles east of the site. Natural soils are described as poorly drained silts and clays. Due to the development of the area, components of fill are common in the near surface soils.

The nearest resident is located approximately 175 feet to the north. According to the Illinois State Water Survey, the nearest individual well is located 1486 feet to the northwest (depth of well is 106 ft). At one time, this well was probably utilized for potable water, but it should be noted that drinking water for the City of Melrose Park is supplied by Lake Michigan. It is unknown at this time if this well has been abandoned. The closest municipal wells are located to the 1.66 miles to the south in Bellwoood.

There are wetlands located along the Des Plaines River to the east. The Des Plaines River has been designated as a fishery by the Illinois Department of Natural Resources. There is information suggesting that desirable fish populations are available in Silver Creek, this would

suggest that this creek is a fishery (http://silvercreekwatershed.org/plan.htm).

Section 2.2 Site History

The industrial history of the property/area is currently unclear. From the Cook County Tax Assessment, the building was built near 1965. It is unknown if Sun Chemical was the original owner of the property, but Marvel Engineering purchased the property in 1974 from Sun Chemical. The operations conducted by Sun Chemical are unknown at this time. Marvel Engineering used the facility to manufacture fuel oil filters. Another building was located south of the current facility and it was believed that a plating facility was in operation there (information from former Vice President of Operations, Marvel Engineering, Peter Heinrich, during 1997 interview, Integrated Assessment). The building is no longer present; it is rumored to have burned, but the exact date is unknown. There is rumor that previous uses of the site included the manufacture of timing devices for explosives and television components to plating operations (Peter Heinrich interview, 1997 Integrated Assessment). In the early 1990s, Marvel Engineering sold approximately 5 acres of property located south of the facility to Lypho-med (now known as Fresenius Kabi). The portion that was purchased is currently being utilized for parking for Fresenius Kabi.

It appears that Fresenius Kabi has acquired the most of the property (paved, parking lot areas). According to the Cook County Tax Assessor, it appears that the property taxes have been paid by Fresenius Kabi since 2012. Also conversations with past Marvel Engineering employees have confirmed that the parking lot areas of the site were purchased by Fresenius Kabi.

Further investigation reveals that the building portion of the site is being represented by a law office (Liston & Tsantilis) that specializes in land use, zoning and real estate. Information gathered during this Site Reassessment inspection revealed that the Marvel Engineering has recently moved to a new location (450 S. Lombard Ave, Addison, IL). This move appears to have occurred sometime in the latter part of 2016, as the website still has the former address listed. http://www.marvelengineering.com/about_us.html

Section 2.3 CERCLA Investigative History

On September 30, 1992 the site was referred to the Office of Site Evaluation for evaluation. According to a letter received by Illinois EPA from a trustee of the Marvel Engineering Company, an environmental study had determined that substantial cleanup work was needed on the property because of asbestos in the industrial plant, leaking from underground tanks, and toxic contamination of the ground. According to the letter, the estimated cost of clean-up was thirty-seven million dollars. To date, this environmental report has not been verified. According to the Illinois EPA file for Marvel Engineering (LPC 0311860037), property owners at this time, wanted to initiate CERCLA response actions at the site, in order to begin the remediation of the Marvel Engineering property. From the letter, it is surmised that the trustees hoped Illinois EPA would assist in the cleanup of the property.

Neither a Preliminary Assessment nor a Site Inspection was performed at this site. A 1997 Integrated Assessment collected soil and sediment samples. Ten soil samples were collected from the property. The soil samples collected from the portions of the site which were owned by Marvel Engineering contained organic and inorganic compounds at concentrations greater than three times the background. These compounds are summarized in Table 2.

Soil samples exceeded Residential Regional Management Levels (RMLs) for benzo(a)anthracene (highest value 12 ppm (X110)), Benzo(a)pyrene (12 ppm, X110), benzo(b)fluoranthene (10 ppm, X110) and dibenzo(a,h)anthracene (2.7 ppm, X110) (Table 3). A removal action was not pursued due to only one sample for lead (X104) exceeded Industrial RMLs.

Superfund chemical Data Matrix (SCDM) values were exceeded for benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene (Table 4). One sample X114 (1.4 ppm) exceeded the Aroclor 1254 SCDM value (1 ppm). The highest level of Aroclor 1254 was found just downgradient from a fenced area containing transformers.

Sediment sample X113 was collected to represent background concentrations. When compared to these background concentrations, X112 exhibited elevated levels (3 times background) of arsenic, 2,4-dinitrotoluene, benzo(a)anthracene, benzo(a)pyrene,

benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene and pyrene (Table 5).

Both sediment samples were compared to Ontario Sediment Guidelines as well as U.S. EPA Ecotox thresholds (Table 6). Both sediment samples exceeded the Ecotox and Ontario values for copper, lead, nickel, benzo(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene. Only the Ontario standards were exceeded for arsenic, chromium and manganese (Table 6).

Section 3.0 Other Cleanup Authorities and Activities

It appears as though the site has not had any other activities or remediation. Yet, according to the U.S. EPA website, Superfund Enterprise Management System (SEMS), the site was designated as being under a state-lead cleanup.

Section 4.0 Site Reassessment Field Activities

Section 4.1 Site Reconnaissance

On February 24, 2017, the Marvel Engineering site was visited to determine if site conditions had changed since the last inspection (1997). Upon arriving at the property, the doors of the building were locked and the parking lot was fenced with the gate closed. From correspondence with Marvel Engineering the company has moved from the premises. At the time of the inspection, there was no activity at the property. The property is fenced with the building appearing to be in good condition. It appears that most of the property is now covered with concrete/asphalt and gravel. During the 1997 inspection there was an area that was covered with trees and brush on the east side of the property, south of the building. Sometime between 2002 and 2005, this area was cleared and covered with gravel and has been used as a parking area for trailers. No samples were taken during this Site Reassessment.

Changes at the property include the removal of the brushy woody area located south of the building and its replacement with a concrete or asphalt parking area sometime between 2002

and 2005. Otherwise there have not been many changes since the 1997 Integrated Assessment.

Section 5.0 Source Discussion and Pathway Analysis

CERCLA identifies three migration pathways and one exposure pathway, as identified in its Hazard Ranking System, by which hazardous substances may pose a threat to humans and/or the environment. Consequently, sites are evaluated on their known or potential impact to these pathways. The pathways evaluated are groundwater migration, surface water migration and soil exposure.

Section 5.1 Source Summary

Soil samples collected in 1997 indicated the elevated levels of volatiles, semi volatiles, Aroclors and heavy metals when compared to background levels. Past interviews with employees indicated that the site may have been utilized for the manufacture of devices for explosives, manufacture of television components, plating operations and most currently the manufacture of oil filters. The area of elevated PAH contamination was estimated to be approximately 160,000 square feet. All samples used to calculate this area were collected in the upper 2 feet of the soil. It is assumed that past operations at the site have contributed to the disposition of the contaminants on-site. PAHs are consistent with the manufacture of aluminum, iron and steel, manufacture or use of metal working fluids and incomplete combustion of organic material (possibly from explosive devices). All of these activities and associated chemicals can be attributable to the site. The site is fenced with the majority of the property under concrete or rock. This would essentially restrict the exposure to contaminated soils on the property. Soil samples compared to U.S.EPA's Industrial Regional Management Levels, did not result in any exceedances.

The 10 soil samples collected from the portions of the site contained organic and inorganic compounds at concentrations greater than three times the background. One volatile chemical (trichloroethene) was detected in sample X103. These compounds are summarized in Table 2. Soil samples exceeded Regional Management Levels (RMLs) for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene and dibenzo(a,h)anthracene.

Superfund chemical Data Matrix (SCDM) values were exceeded for benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene (Table 4). One sample X114 (1.4 ppm) exceeded the polychlorinated biphenyl SCDM value (1 ppm). The highest level of Aroclor 1254 was found just downgradient from a former fenced area containing transformers.

Section 5.2 Groundwater Pathway

The surficial geology of the Melrose Park area would be described as 50 – 80 feet of Pleistocene age deposits consisting of silts and clays. The Silurian age bedrock consists of Niagaran and Alexandrian dolomites at 80 – 400 feet deep. The Ordovician deposits consist of the Maquoketa Shale and the St. Peter Sandstone at 400 – 1000 feet. The Cambrian-Ordovician deposits consist of the Oneata and Jordan dolomites at 1000-1100 feet; Franconia sandstone and shale from 1400-1550 feet; and the Eau Claire Dolomite and Sandstone from 1550-1900 feet. In northeastern Illinois region, the groundwater can be obtained from four major systems: the glacial drift system, shallow bedrock system and two deep bedrock systems.

The drinking water for Melrose Park is supplied by the City of Chicago with the source being Lake Michigan.
http://www.melrosepark.org/docs/2014_Village_of_Melrose_Park_CCR_(1).pdf. The groundwater pathway was not evaluated at the Marvel Engineering site since drinking water for the region is supplied by Lake Michigan. There is a well located to the northwest of the site (1486 feet, depth of 106, drilled 1940). This well is assumed to be abandoned or to not be utilized for potable purposes.

There are four wells located in Bellwood that are used in emergency situations for the City of Bellwood (otherwise the drinking water is obtained from Lake Michigan). These wells are located to the south of the site at about 2.75 miles (depth of 1956 and 1966 feet) and at 3.33 miles (depth of 1465 and 1845 feet) (Figure 4). The population served from these wells is documented at 19,161 people.

Section 5.3 Surface Water Pathway

The topography of the area is extremely flat. There appears to be no defined drainage pathway for surface water runoff. It is assumed that storm water from the Marvel Engineering site (as well as other facilities) enters the Silver Creek via an outfall just south of Armitage Street by storm water runoff. Silver Creek is also known as the Bensenville Ditch. The surface water pathway is unverified. Actual runoff from the site does not appear to enter into any runoff grating located on Armitage Street or on Hawthorne Ave. Silver Creek flows approximately 2.38 miles to the Des Plaines River. There are no potable water intakes along the 15 mile target distance (Figure 7). There are no wetlands along Silver Creek. There are several wetlands along the 15 mile TDL. The estimated total of wetland frontage along the 15 miles is 14,149 ft. or 2.68 miles (Figure 6).

Section 5.4 Soil Exposure

Undisturbed soils in the Melrose Park area are primarily composed of clays and silts which were deposited in a glacial lake. Due to the extensive industrialization which has taken place in the area of the Marvel Engineering site, most of the soils have been disturbed and contain rubble and urban debris.

During the 2017 reconnaissance, it was determined that not much has changed since the 1997 Integrated Assessment. The former area of trees and brush located to the south of the building have been removed, replaced by concrete/asphalt paving and has been utilized as a parking area. The building of additional fences has also occurred. In 1997, the only area of fencing was on the eastern boundary. Now the fencing encompasses the entire site. There was evidence of trespassers in the past, but no signs of trespassing were observed from the 2017 reconnaissance.

There are no schools or daycares located within 200 feet of the Marvel Engineering site. There are residences approximately 175 feet to the north of the site, however the drainage system associated with the railroad and Armitage Street make migration of contaminants north to the residences unlikely. There are several industries located to the west, east and south of the site, including manufacturing and metal working. The site is currently fenced and inaccessible.

Ten soil samples were collected from the property during the 1997 Integrated Assessment. The soil samples collected from the portions of the site which were owned by Marvel Engineering contained organic and inorganic compounds at concentrations greater than three times the background. These compounds are summarized in Table 2.

During the 1997 IA, the estimated area of elevated PAH contamination was estimated to be approximately 160,000 square feet. It is assumed that this contamination is still present on the property.

Population Distribution

Distance (miles)	Population
Onsite	0
0 – ¼	465
¼ - 1/2	2196
½ - 1	15246

U.S.G.S. 7.5 minute topographic quadrangle
2010 Census Summary Population and Housing Characteristics, Illinois

Section 6.0 Summary and Conclusion

The purpose of this investigation was to determine if the Marvel Engineering site warrants further evaluation by the CERCLA Site Assessment program. The primary objective of a Site Reassessment is to gather necessary information needed to evaluate the extent that a site presents a threat to human health and/or the environment

The Marvel Engineering site was selected to be investigated due to the past activities which have occurred at the site and the possible release of contaminants to the environment.

This site was an operating manufacturing plant since 1965. Until recently the property was utilized by Marvel Engineering, although there is no information about any waste streams or documentation through the RCRA program. At the present time a portion of the property is owned by Fresenius Kabi, who has a manufacturing plant located at 2020 Ruby Street just adjacent to the subject property. Fresenius Kabi produces pharmaceutical products. The main portion of the Marvel Engineering site is the building, which is being held under a local law firm. It is unclear at this time if any outside remedial work has been accomplished by other entities at the subject property.

Contaminated soil is a concern at the property based on past environmental sampling identifying volatiles, semi volatiles and lead. Most of the property is covered with concrete or crushed rock preventing exposure to these contaminants and, at this time, there are no workers at this location.

Contaminated soil has the potential to contaminate groundwater by leaching. The surrounding residents obtain drinking water from Lake Michigan. There are four emergency wells located in the City of Bellwood, which serve approximately 19,161 people in emergencies. There are no private wells located within four miles of the facility according to the Illinois EPA's Surface Water Assessment Program Assessment Tool.

The surface water pathway is incomplete. There is not a definitive surface water pathway from the property to Silver Creek. The surface water pathway from the site to the Bensenville Ditch is unverified. The possibility of these contaminants reaching the surface water pathway is considered small due to the flat terrain of the property. Attribution of any contaminates uncovered in the Bensenville Ditch would be difficult to pinpoint to one facility due to the number of manufacturing operations in the area.

Section 7.0 REFERENCES

Illinois Environmental Protection Agency, Bureau of Land files, LPC 0311860037 Marvel Engineering

Source Water Assessment Program. http://kleene.er.usgs.gov/arcims/swap/index.htm

Figure 1
Site Location Map

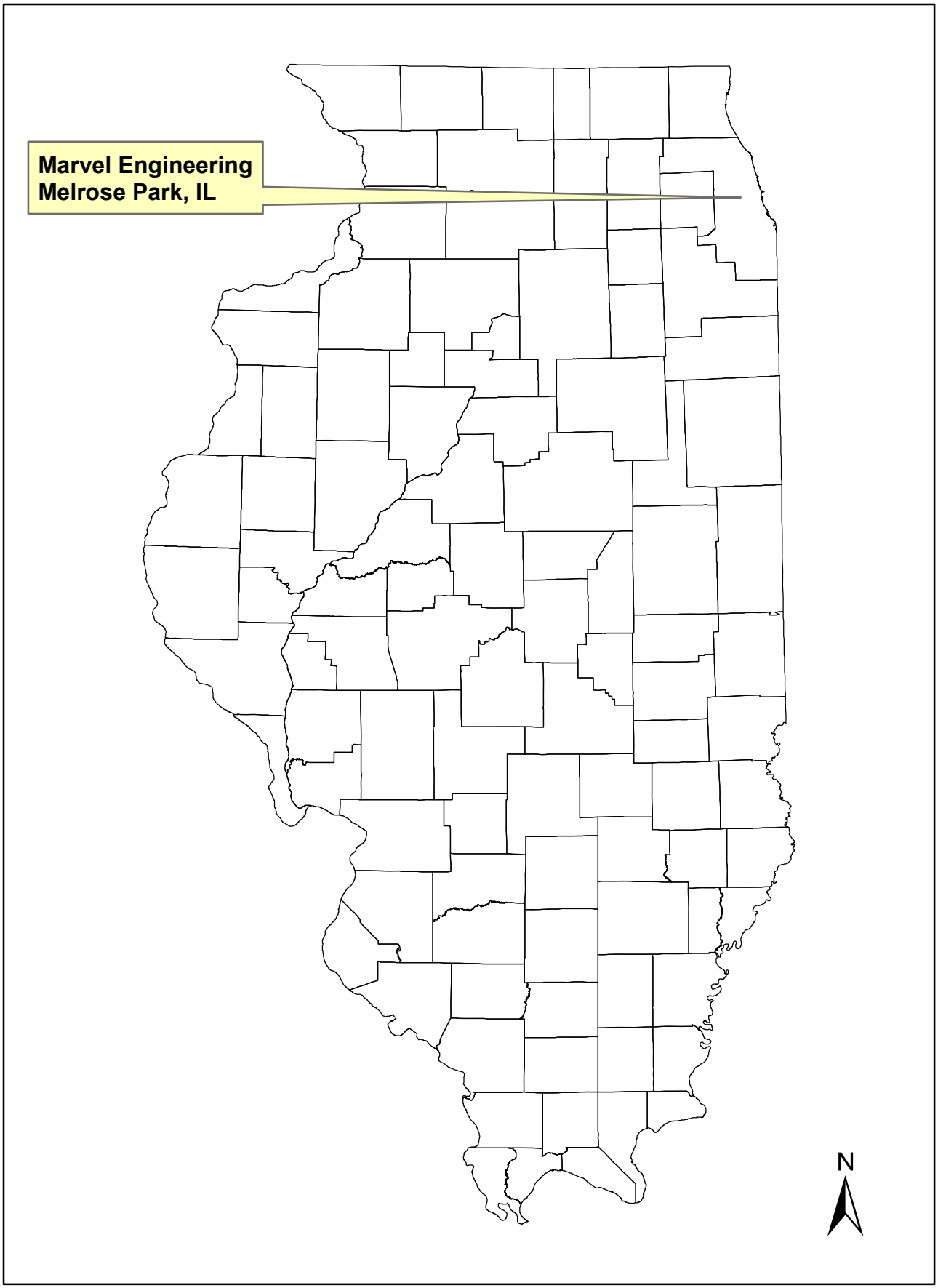

Figure 2 Site Topographic Map

Figure 3 Site Aerial Map

Figure 4 - 4-Mile Map with Wells

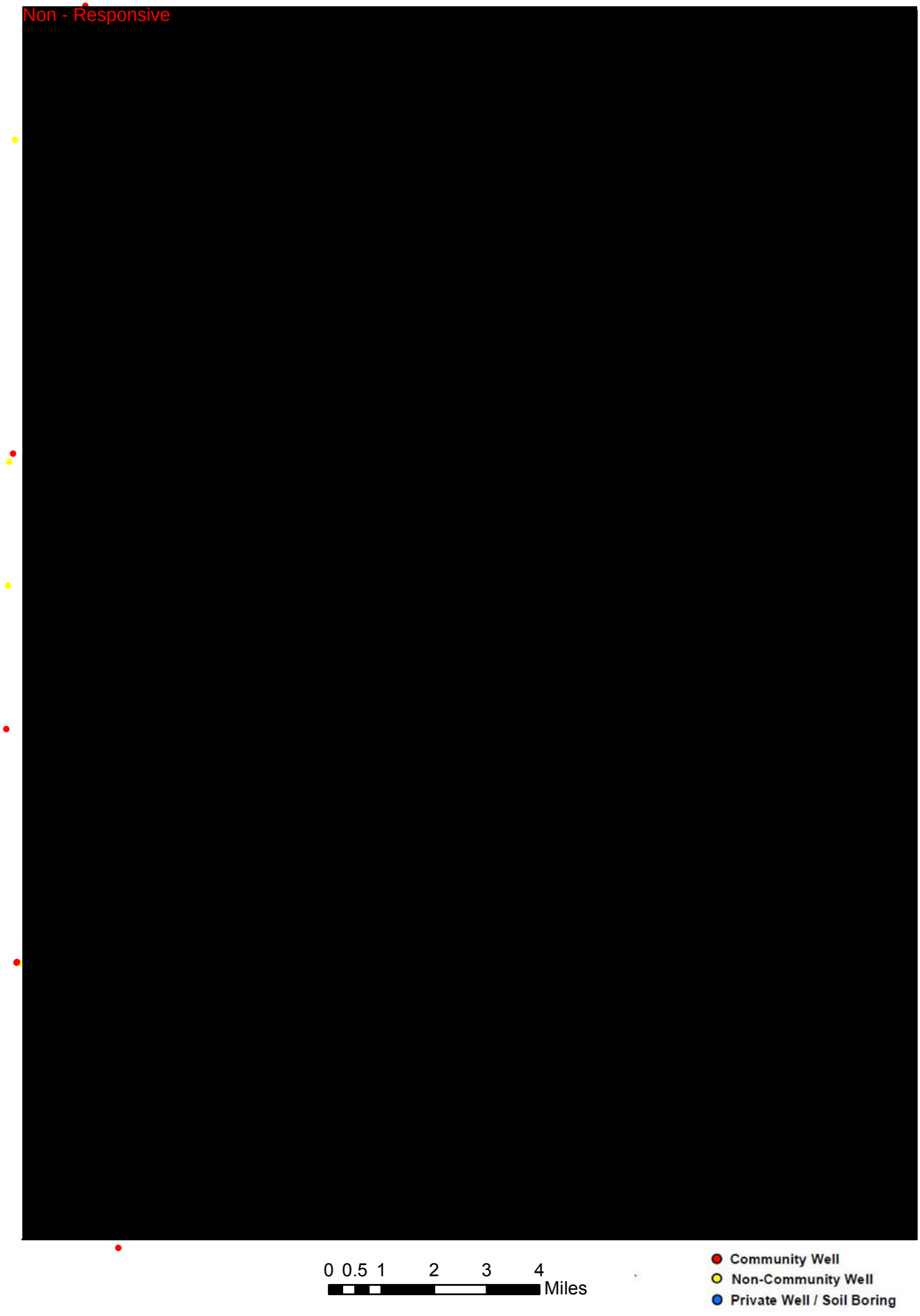

Figure 5 - IS Sample Location Map

Figure 6 - Wetland Location Map

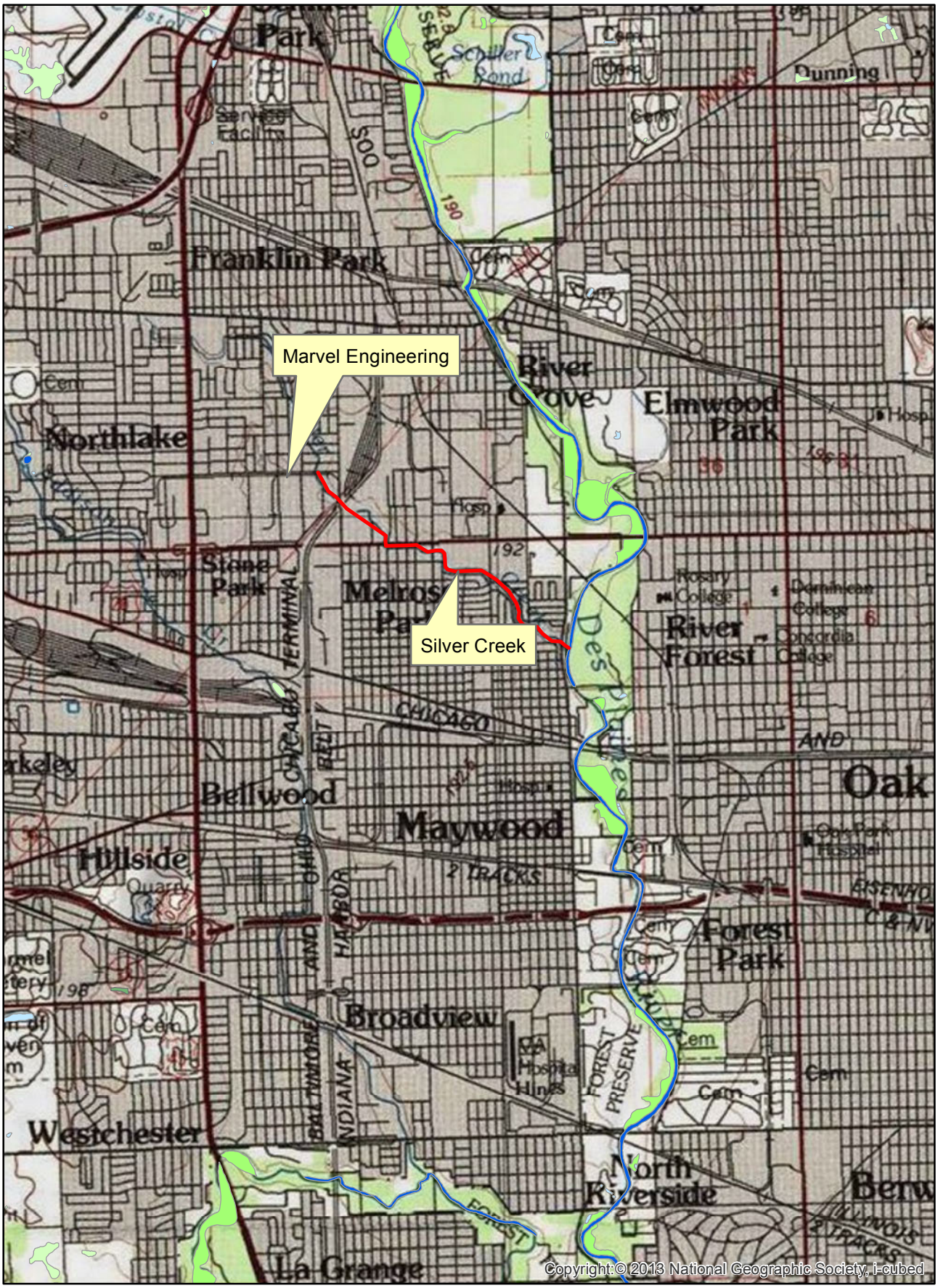

Figure 7 - 15 Mile TDL Map

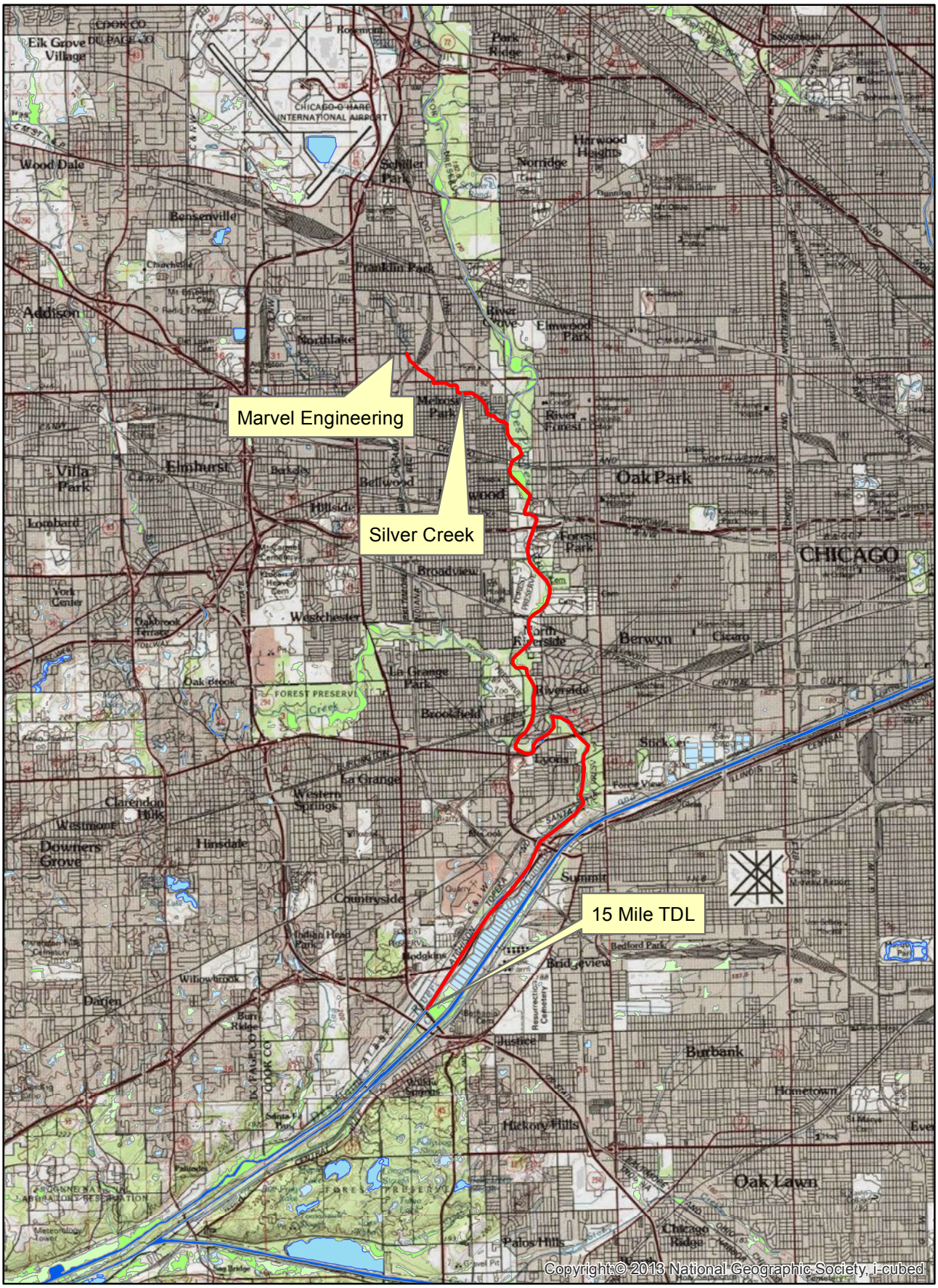

TABLE 1. SAMPLE DESCRIPTIONS

Sample number	Sample depth	Sample description
X101	0-3 inches	Background soil sample taken in Gouin Park. Sample located 120' north of parking lot and 28' west of Scott Street. Sample consisted of black silt loam.
X102	1.5 feet	Soil sample collected from east-central part of the site. Sample located 20' north of south fence in enclosure and 80' east of western fence in the enclosure. The sample consisted of dry, hard, gray clay.
X103	1.0 feet	Soil sample collected from east-central part of the site. Sample located 72' west of east fence and 40 feet south of north fence in the enclosure. The sample consisted of black cindery material and clay.
X104	1.5 feet	Soil sample collected from the southeast part of the site. Sample located 8' west of site and 17' south of the north end of parking lot. The sample consisted of a brown silty clay.
X105	1-2 feet	Soil sample collected from the southwest part of the site. Sample located 98' south of the parking lot entrance and 24' east of Hawthorn Street. The sample consisted of sandy-silty fill with gravel, asphalt roofing material, and some black, tarry material. The sample had a burnt odor.
X106	0-6 inches	Soil sample collected from the southwest part of the site. Sample located 33 feet north of the parking lot and 29.5 feet east of Hawthorne Street. The sample consisted of silty clay fill with gravel and black organic material.
X107	0-5 inches	Soil sample collected from the south-central part of the site. Sample located 15 feet west of a fence seperating the gravel and asphalt parking lots on the south part of the site, and 68' south of asphalt pavement to the north.. The sample consisted of a dark silty clay fill with gravel.
X108	1-2 feet	Soil sample collected from the south-east part of of the site. Sample located 12 feet west from the east fence and 23 feet north of the east fence. The sample consists of brown silty clay with black mottling. The sample had a strong hydrocarbon odor.

TABLE 1. SAMPLE DESCRIPTIONS (continued)

Sample number	Sample depth	Sample description
X109/X110	0-6 inches	Soil sample collected from the northeast part of the site. Sample located 66 feet south of the small brick building and 30 feet east from the main building. The sample consisted of black sandy fill and some gravel.
X111	0-3 inches	Black waste tarry waste sample collected from the enclosed area. Sample located 40' south north fence and 72' west of the east fence.
X112	0-7 inches	Sediment sample collected in Silver Creek downstream from the outfall east of Marvel Engineeri building. Sample located 20' south of confluence of th outfall and Silver Creek. The sample consisted of gray-brown silty clay with cinders and gravel.
X113	0-7 inches	Sediment sample collected in Silver Creek upstream from the outfall east of Marvel Engineering building. Sample located along west bank of Silver Creek and 31 feet north of Armitage Street. The sample consists of gray silty clay.
X114	0-2 inches	Soil sample collected along a retaining wall on the east side of the main building. Behind the retaining wall are transformers. Sample located 14 feet north where the retaining wall joins the building near crack in wall. The sample consisted of silty fill.

Table 2
Soil Sample Summary

	X101		3 X Bkg	X102		X103		X104		X105		X106		X107		X108		X109		X110		X111		X114	
Aluminum																									
Antimony																									
Arsenic	7	J	21	2	J	7	J	1	J	6	J	10	J	6	J	5	J	2	J	5	J			3	
Barium	109		327	86		75		110		90		76		106		91		85		106				86	
Beryllium																									
Cadmium																									
Calcium																									
Chromium	20		60	17		19		20		18		15		24		377		30		21				18	
Cobalt	11		33																						
Copper	29	J	87	34	J	178	J	71	J	27	J	36	J	40	J	1440	J	392	J	382	J			131	
Iron																									
Lead	56		168	23		164		970		21		32		29		30		670		620				90	
Magnesium																									
Manganese	456		1368																						
Nickel	22		66																						
Potassium																									
Selenium																									
Silver																									
Sodium																									
Thallium																									
Vanadium	28		84																						
Zinc	85	J	255	56		227		99	J	59	J	70	J	100	J	182	J	1760		1660				324	
Mercury																									
Cyanide																									

Yellow - exceeds 3 X background

	X101		3 X Bkg	X102		X103		X104		X105		X106		X107		X108		X109		X110		X111		X114	
2,4-dinitrotoluene	0.42	U																						0.27	J
2-chloronapththalene	0.42	U																						0.43	
2-methylnaphthalene	0.42	U		0.068	J	0.2	J			0.44		0.038	J			1.1						11		0.074	J
Acenapthylene	0.42	U								0.024	J	0.032	J	0.032	J			0.58	J	0.48	J			0.26	J
acenaphthene	0.42	U								1.3						0.04	J	0.87	J	0.96	J	4.9	J	0.14	J
Anthracene	0.42	U				0.096	J	0.034	J	2.5		0.32	J	0.029	J			1.9	J	2.6	J	4.4	J	7.9	
Benzo(a)anthracene	0.065	J	0.195			0.54		0.12	J	4.9		0.89		0.084	J	0.061	J	8.3		12		5.8		3.2	
Benzo(a)pyrene	0.42	U				0.61		0.14	J	4.4		0.8		0.11	J	0.072	J	8.3		12				3.2	
Benzo(b)fluoranthene	0.2	J	0.6			0.82		0.098	J	5.6		1		0.15	J			7.9		10		5.1	J	5.6	
Benzo(g,h,i)perylene	0.091	J	0.273	0.032	J	0.49		0.12	J	2.9		0.42		0.14	J	0.12	J	7.2		8.1				2.5	
benzo(k)fluoranthene	0.42	U				0.49		0.17	J									8.4		12		4.8	J	1.6	
bis(2-Ethylhexyl)phthalate	0.42	U																7		3.9	J			1.5	
Carbazole	0.42	U				0.056	J	0.029	J	1.8		0.15	J	0.024	J			1.5	J	1.5	J			0.53	
chrysene	0.085	J	0.255	0.03	J	0.6		0.17	J	4.9		0.92		0.12	J	0.16	J	10		13		8.5	J	3.5	
Dibenz(a,h)anthracene	0.03	J	0.09			0.19	J	0.042	J	1.5		0.21	J	0.034	J	0.042	J	2.5	J	2.7	J			0.98	
dibenzofuran	0.42	U				0.052	J			0.76		0.058				0.063	J	0.55	J	0.56	J	4.2	J		
Di-n-butylphthalate	0.029	J	0.087	0.023	J	0.031	J	0.12	J			0.059	J	0.19	J	0.13	J								
di-n-Octylphthalate	0.42	U																						0.029	J
Fluoranthene	0.16	J	0.48	0.029	J	1		0.37	J	6.5		1.9		0.21	J	0.15	J	19		25		26		6.4	
Fluorene	0.42	U								1.6		0.13	J			0.096	J	0.97	J	0.89	J	5.6	J		
Indeno(1,2,3-cd)pyrene	0.082	J	0.246			0.5		0.11	J	3.1		0.45		0.098	J	0.094	J	7.2		7				2.7	
naphthalene	0.42	U				0.074	J			0.96		0.051				0.5		0.28	J	0.39	J			0.078	J
Phenanthrene	0.061	J	0.183	0.07	J	0.52		0.18	J	7.6		1.2		0.11	J	0.25	J	10		12		31	J	3.4	
Pyrene	0.1	J	0.3	0.026	J	0.67		0.25	J	7.6		1.4		0.15	J	0.15	J	13		22		17		4.2	
Trichloroethene	0.013	U		0.004	J	2.1		0.013	U	0.013	U	0.012	U	0.012	U	0.012	U	0.02		0.074				0.002	J
Aroclor 1254	0.042	U												0.36	J									1.4	

Table 3
Soil Samples (RMLs)

	RML (res)	RML (ind)	X102		X103		X104		X105		X106		X107		X108		X109		X110		X111		X114	
Aluminum	230000	3400000																						
Antimony	94	1400																						
Arsenic	67	300																						
Barium	46000	650000																						
Beryllium	470	6900																						
Cadmium	210	3000																						
Calcium	na																							
Chromium	na																							
Cobalt	70	1000																						
Copper	9400	140000																						
Iron	160000	2500000																						
Lead	400	800					970										670		620					
Magnesium	na																							
Manganese	5500	77000																						
Nickel	2500	33000																						
Potassium	na																							
Selenium	1200	18000																						
Silver	1200	18000																						
Sodium	na																							
Thallium	na																							
Vanadium	1200	17000																						
Zinc	70,000	1,100,000																						
Mercury	28	120																						
Cyanide	64	400																						

RML - Removal Management Level
res - residential
ind - Industrial

	RML (res)	RML (ind)	X102		X103		X104		X105		X106		X107		X108		X109		X110		X111		X114	
2,4-dinitrotoluen	170	740																						
chloronapththale	19000	280000																						
methylnaphthale	700	9100																						
acenaphthalene	10000	140000																						
Anthracene	52000	680000																						
enzo(a)anthrace	1.5	290							4.9										12		5.8		3.2	
Benzo(a)pyrene	1.5	29							4.4								8.3		12				3.2	
enzo(b)fluoranth	1.5	290							5.6								7.9		10		5.1		5.6	
enzo(g,h,i)peryle	na	na																						
nzo(k)fluoranthe	150	2900																						
-Ethylhexyl)phth	3700	16000																						
Carbazole	na	na																						
chrysene	1500	29000																						
enzo(a,h)anthrac	1.5	29							1.5	J							2.5	J	2.7	J				
dibenzofuran	220	3100																						
i-n-butylphthalat	18000	250000																						
-n-Octylphthalat	1800	25000																						
Fluoranthene	700	91000																						
Fluorene	700	91000																						
eno(1,2,3-cd)pyr	15	290																						
naphthalene	380	1700																						
Phenanthrene	na	na																						
Pyrene	5200	68000																						

Table 4
SCDM Comparison

	SCDM (Ref Values)	X105		X107		X109		X110		X111		X114	
2,4-dinitrotoluene													
2-chloronapththalene													
2-methylnaphthalene													
acenaphthalene	4000												
Anthracene	20000												
Benzo(a)anthracene	0.02	4.9						12		5.8		3.2	
Benzo(a)pyrene	0.02	4.4				8.3		12				3.2	
Benzo(b)fluoranthen		5.6				7.9		10		5.1		5.6	
Benzo(g,h,i)perylene	na												
benzo(k)fluoranthene	2												
bis(2-Ethylhexyl)phthalate	100												
Carbazole	30												
chrysene	20												
Dibenz(a,h)anthracene	0.02	1.5	J			2.5	J	2.7	J				
dibenzofuran	70												
Di-n-butylphthalate	7000												
di-n-Octylphthalate	700												
Fluoranthene													
Fluorene	3000												
Indeno(1,2,3-cd)pyrene	0.2												
naphthalene	1000												
Phenanthrene	na												
Pyrene	2000												
Aroclor 1254	1			0.36	J							1.4	

Table 5
Sediment Sample Summary

	X113		3 X Bkgrd	X112																										
Aluminum																														
Antimony																														
Arsenic	2	J	6	7																										
Barium	81		243	38																										
Beryllium																														
Cadmium																														
Calcium																														
Chromium	41		123	51																										
Cobalt	11		33	13																										
Copper	81	J	243	46	J																									
Iron																														
Lead	118		354	162																										
Magnesium																														
Manganese	499		1497	386																										
Nickel	25		75	29																										
Potassium																														
Selenium																														
Silver																														
Sodium																														
Thallium																														
Vanadium	22		66	19																										
Zinc	245	J	735	87																										
Mercury																														
Cyanide																														

	X113			X112	
2,4-dinitrotoluene	0.098	J	0.294	0.64	J
2-chloronapththalene	0.46	U			
2-methylnaphthalene	0.023	J	0.069		
acenaphthylene	0.46	U			
Acenapthene	0.073	J	0.219		
Anthracene	0.22	J	0.66		
Benzo(a)anthracene	0.92		2.76	4.1	
Benzo(a)pyrene	0.92		2.76	2.9	
Benzo(b)fluoranthene	1.6		4.8	3.6	
Benzo(g,h,i)perylene	0.73		2.19	2.1	J
benzo(k)fluoranthene	0.82		2.46	3.1	
bis(2-Ethylhexyl)phthalate	0.65		1.95	0.086	
Carbazole	0.22	J	0.66		
chrysene	1.3		3.9	4.5	
Dibenzo(a,h)anthracene	0.28	J	0.84	0.75	
dibenzofuran	0.055	J	0.165		
Di-n-butylphthalate	0.081	J	0.243		
di-n-Octylphthalate	0.46	U			
Fluoranthene	2.6		7.8	12	
Fluorene	0.098	J	0.294		
Indeno(1,2,3-cd)pyrene	0.8		2.4	2.1	
naphthalene	0.024	J	0.072		
Phenanthrene	1.2		3.6	7.8	
Pyrene	1.8		5.4	8.9	

Table 5
Sediment Sample Summary

Table 5
Sediment Sample Summary

Table 6
Sediment Samples (Eco/Ontario)

	Ontario Sediment Benchmark for Lowest Effect Level (ppm)	United States EPA Ecotox Thresholds or ARCS Effect Concentrations	X112		X113																	
Aluminum	na	58030 (PEC)																				
Antimony	na	na																				
Arsenic	6	8.2	7		2	J																
Barium	na	na	38		81																	
Beryllium	na	na																				
Cadmium	0.6	1.2																				
Calcium	na	na																				
Chromium	26	81	51		41																	
Cobalt	na	na	13		11																	
Copper	16	34	46	J	81	J																
Iron	20,000	na																				
Lead	31	46.7	162		118																	
Magnesium	na	na																				
Manganese	460	1081 (PEC)	386		499																	
Nickel	16	20.9	29		25																	
Potassium	na	na																				
Selenium	na	na																				
Silver	na	1																				
Sodium	na	na																				
Thallium	na	na																				
Vanadium	na	na	19		22																	
Zinc	120	150	87		245	J																
Mercury	0.2	0.15																				
Cyanide	na	na																				

	Ontario Sediment Benchmark for Lowest Effect Level (ppm)	United States EPA Ecotox Thresholds or ARCS Effect Concentrations	X112		X113	
2,4-dinitrotoluene	na	na	0.64	J	0.098	J
2-chloronaptht halene	na	na				
2-methylnaphthalene	na	na				
acenaphthene	na	0.016				
Acenaphthylene	na	0.044				
Anthracene	0.22	0.0853				
Benzo(a)anthracene	0.32	0.261	4.1		0.92	
Benzo(a)pyrene	0.37	0.43	2.9		0.92	
Benzo(b)fluoranthen	na	na	3.6		1.6	
Benzo(g,h,i)perylene	0.17	na	2.1	J	0.73	
benzo(k)fluoranthene	0.24	na	3.1		0.82	
bis(2-Ethylhexyl)phthalate	na	na	0.086		0.65	
Carbazole	na	na				
chrysene	0.34	0.384	4.5		1.3	
Dibenzo(a,h)anthracene	0.06	0.0634	0.75		0.28	J
dibenzofuran	na	na				
Di-n-butylphthalate	na	na				
di-n-Octylphthalate	na	na				
Fluoranthene	0.75	0.6	12		2.6	
Fluorene	0.19	0.19				

Table 6
Sediment Samples (Eco/Ontario)

Indeno(1,2,3-cd)pyrene	0.2	0.488	2.1		0.8	
naphthalene	na	0.16				
Phenanthrene	0.56	0.24	7.8		1.2	
Pyrene	0.49	0.665	8.9		1.8	

Table 6
Sediment Samples (Eco/Ontario)

Table 6
Sediment Samples (Eco/Ontario)

Table 6
Sediment Samples (Eco/Ontario)

Table 7
Sediment Samples (RMLs)

	RML (res)	RML (ind)	X112		X113																
Aluminum	230000	3400000																			
Antimony	94	1400																			
Arsenic	67	300	38		81																
Barium	46000	650000																			
Beryllium	470	6900																			
Cadmium	210	3000																			
Calcium	na																				
Chromium	na																				
Cobalt	70	1000																			
Copper	9400	140000																			
Iron	160000	2500000																			
Lead	400	800																			
Magnesium	na																				
Manganese	5500	77000																			
Nickel	2500	33000																			
Potassium	na																				
Selenium	1200	18000																			
Silver	1200	18000																			
Sodium	na																				
Thallium	na																				
Vanadium	1200	17000																			
Zinc	70,000	1,100,000																			
Mercury	28	120																			
Cyanide	64	400																			

			X112		X113									
2,4-dinitrotoluene	170	740	0.64	J	0.098	J								
2-chloronapththalene	19000	280000												
2-methylnaphthalene	700	9100												
acenaphthalene	10000	140000												
Anthracene	52000	680000												
Benzo(a)anthracene	1.5	290	4.1		0.92									
Benzo(a)pyrene	1.5	29	2.9		0.92									
Benzo(b)fluoranthene	1.5	290	3.6		1.6									
Benzo(g,h,i)perylene	na	na	2.1	J	0.73									
benzo(k)fluoranthene	150	2900	3.1		0.82									
bis(2-Ethylhexyl)phthalate	3700	16000	0.086		0.65									
Carbazole	na	na												
chrysene	1500	29000	4.5		1.3									
Dibenzo(a,h)anthracene	1.5	29	0.75		0.28	J								
dibenzofuran	220	3100												
Di-n-butylphthalate	18000	250000												
di-n-Octylphthalate	1800	25000												
Fluoranthene	700	91000	12		2.6									
Fluorene	700	91000												
Indeno(1,2,3-cd)pyrene	15	290	2.1		0.8									
naphthalene	380	1700												
Phenanthrene	na	na	7.8		1.2									
Pyrene	5200	68000	8.9		1.8									

Table 7
Sediment Samples (RMLs)

Table 7
Sediment Samples (RMLs)

SITE NAME: Marvel Engineering	
CERCLIS ID: ILD984837104	COUNTY: Cook

DATE:	2/23/2017
TIME:	1300
PHOTO BY:	L. Range
DIRECTION:	North

COMMENTS:
Photo taken of the former Marvel Engineering building from the south side. Property was fenced on this side.

DATE:	2/23/2017
TIME:	1330
PHOTO BY:	L. Range
DIRECTION:	East

COMMENTS:
Photo taken of the door located on the west side of the building. Door was locked as Marvel has moved to a new location.

SITE NAME: Marvel Engineering	
CERCLIS ID: ILD984837104	COUNTY: Cook

DATE:	2/23/2017
TIME:	1345
PHOTO BY:	L. Range
DIRECTION:	East
COMMENTS: Photo taken of the north side of the building. This side was also fenced further to the east.	

DATE:	2/23/2017
TIME:	1400
PHOTO BY:	L. Range
DIRECTION:	East
COMMENTS: Photo take from Hawthorne avenue looking east on the south side of the building. No tresspassing sign is posted as well as space for lease. 708-343-4031